

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

What is claimed:

1. (Currently Amended) A composition comprising a DNA repair modulator that specifically binds to the sequence KKKYIEIRKEAREAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining, ~~said DNA repair modulator not comprising monoclonal antibody 18-2.~~
2. (Original) The composition of claim 1, wherein the DNA repair modulator comprises a polypeptide.
3. (Previously Presented) The composition of claim 2, wherein the polypeptide comprises the sequence QVKLQESGAELVKPGASVKLSCKAFDYFTTYDINWIKQRPGQGLWIGWIY PGSGNNKYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYW GQGTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRA NRLVDGVPSRFSGSGSGQDYSLTISSEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).
4. (Previously Presented) The composition of claim 1, wherein said sequence is located on a DNA-PKcs and said DNA repair modulator inhibits less than 50% of DNA-PKcs enzymatic activity.
5. (Original) A single chain antibody that specifically binds to DNA-PKcs in a region outside of the catalytic domain, wherein the single chain antibody includes complementarity determining regions FTTYDIN (SEQ. ID NO.:18), WIYPGSGNNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20), KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ. ID NO.:23), in an immunoglobulin framework.
6. (Previously Presented) A pharmaceutical composition comprising a DNA repair modulator, a prodrug thereof, or combination thereof, wherein the modulator inhibits DNA repair by specifically interacting with DNA-PKcs outside of the DNA-PKcs catalytic domain, said DNA

repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKQRPGQGLWIGWIYP GSGNNYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGG GTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANR LVDGVPSRFSGSGSGQDYSLTISSEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

7. (Cancelled)

8. (Previously Presented) The pharmaceutical composition of claim 6, wherein the DNA repair modulator interacts with a region of DNA-PKcs having the sequence KKYIEIRKEAREAAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof.

9. (Original) The pharmaceutical composition of claim 6, wherein the DNA repair modulator inhibits DNA end joining.

10. (Cancelled)

11. (Original) The pharmaceutical composition of claim 6, wherein the DNA repair comprises a repair of a double-strand break.

12. (Original) The pharmaceutical composition of claim 6, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

13. (Previously Presented) A pharmaceutical composition comprising a DNA repair modulator, a prodrug thereof, or a combination thereof, wherein the modulator interacts with a DNA repair polypeptide and sterically inhibits the DNA repair polypeptide, said DNA repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKQRPGQGLWIGWIYPGSGNNY NEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGGGTTTVTV SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANRLVDGVP SRFSGSGSGQDYSLTISSEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

14. (Cancelled)

15. (Original) The pharmaceutical composition of claim 13, wherein the DNA repair modulator interacts with a region of DNA-PKcs.

16. (Previously Presented) The pharmaceutical composition of claim 15, wherein the region of DNA-PKcs include the sequence KKYIEIRKEAREAAANGDSDGPSYM (SEQ. ID. NO. 16) or a portion thereof.

17. (Original) The pharmaceutical composition of claim 13, wherein the DNA repair modulator inhibits DNA end joining.

18. (Cancelled)

19. (Original) The pharmaceutical composition of claim 13, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

20-26 (Cancelled)

27. (Previously Presented) A single chain antibody comprising an organelle localization signal sequence, wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKQRPQGGLWIGWIYPGSGNNY NEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGGQTTTVTV SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANRLVDGVP SRFSGSGSGQDYSLTISSEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

28. (Original) The single chain antibody of claim 27, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.

29. (Original) The single chain antibody of claim 27, wherein the DNA repair polypeptide is DNA-PKcs.

30. (Original) The single chain antibody of claim 29, wherein the single chain antibody binds DNA-PKcs in a region outside the catalytic domain.

31. (Previously Presented) The single chain antibody of claim 30, wherein the region includes the sequence KKYIEIRKEAREAAANGDSDGPSYM (SEQ. ID NO.:16) or a portion thereof.

32. (Previously Presented) A single chain antibody comprising a protein transduction domain wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide

and comprises the sequence

QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKQRPQGGLWIGWIYP
GSGNNYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGQ
GTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANR
LVDGVPSRFSGSGSGQDYSLTISSEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ.
ID NO.:17) or includes the complementarity determining regions FTTYDIN (SEQ ID NO.: 18),
WIYPGSGNNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20),
KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ.
ID NO.:23), in an immunoglobulin framework.

33. (Cancelled)

34. (Previously Presented) The single chain antibody of claim 32, wherein the DNA repair polypeptide comprises DNA-PKcs.

35. (Previously Presented) The single chain antibody of claim 34, wherein the single chain antibody binds to a region of the DNA-PKcs polypeptide outside the catalytic domain.

36. (Previously Presented) The single chain antibody of claim 35, wherein the single chain antibody binds to a region including the sequence KKYIEIRKEAREAAANGDSDGPSYM (SEQ. ID NO.:16) or a portion thereof.

37. (Currently Amended) A pharmaceutical composition comprising a single chain antibody that binds to a polypeptide comprising the sequence KKKYIEIRKEAREAAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining, ~~said single chain antibody not comprising monoclonal antibody 18-2.~~

38. (Original) A pharmaceutical composition of claim 37, wherein the single chain antibody comprises a protein transduction domain and an organelle localization signal.

39. (Original) The pharmaceutical composition of claim 38, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.

40-60 (Cancelled)